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**H2Diesel LLC Testimony to the Massachusetts Advanced Biofuels Task Force  
Comments regarding strategic framework initiatives**

H2Diesel Holdings, Inc., a developer and manufacturer of renewable biofuels, appreciates the opportunity to submit testimony to the Massachusetts Advanced Biofuels Task Force regarding the Task Force's legislative, regulatory and other efforts to promote an advanced biofuels industry in the Commonwealth of Massachusetts. H2Diesel directs its comments toward the legislation introduced by the Senate President Therese Murray, House Speaker Salvatore DiMasi and Governor Deval Patrick in November 2007 regarding a biofuels mandate. H2Diesel's comments are also addressed toward the broader strategic framework outlined in the hearing notice.

**Description of H2Diesel**

Formed in 2006, H2Diesel has commercialized a new technology for the manufacture of a biofuel from renewable vegetable oils and animal fats. H2Diesel's plans call for the joint development of a commercial scale production plant at Twin Rivers Technologies in Quincy, MA in 2008. From that plant, H2Diesel hopes to provide to both power generation facilities and commercial and residential heating oil customers in and around Massachusetts a new renewable fuel that can substantially reduce their greenhouse gas emissions. Regulatory and legislative actions in the Commonwealth could hinder or assist H2Diesel with its efforts to produce and sell a biofuel in Massachusetts.

**General Comments**

Governor Patrick and the Legislature are clearly taking a leadership role in fostering biofuels to reduce dependence on foreign oil and greenhouse gas emissions, and we applaud those efforts. In order to strengthen that role we provide the following general comments and recommendations.

We strongly recommend that any legislative or regulatory action maintains a technology neutral and resource neutral approach. During the last several years, many new biofuel technologies, either for gasoline or diesel substitution, are being or have been developed. Some of these efforts will create fuels that are more efficient to produce and have better properties than the fuels that are now more readily available such as corn based ethanol or biodiesel. To the extent that future mandates favor one specific technology, over other new and innovative products, these products could be stifled to the detriment of all of the Commonwealth's citizens.

If there is to be a mandate on the percentage or amount of renewable fuel that is produced or used in the market, there should be flexibility in terms of how that mandate is achieved. There are applications where a renewable biofuel can be completely substituted for a fossil fuel as opposed to being blended with a fossil fuel. If a mechanism is implemented mandating a “blending percentage”, then ONLY blended products will survive in the marketplace to be used by customers even though many products designed to be used as 100% renewable fuels would, in fact, provide greater environmental and renewable benefits.

In order to extend the benefits of renewable fuels as far as possible, there should be flexibility as to what sectors of the State’s economy use renewable fuel and how. Electricity generation, process heating or institutional space-heating applications all have unique characteristics, and as such do not require fuels that are designed to meet an on-road vehicle fuel standard. Imposing such an arbitrary requirement will restrict the benefits that could be achieved by broadly enabling the application of renewable biofuels in Massachusetts, including those that are designed for applications other than as a motor vehicle fuel. We encourage the Commonwealth to be cognizant of the different standards of fuels based on an application or use and not create higher hurdles than necessary for fuel standards. While it may be appropriate that a biofuel that is used for on-road motor vehicle use be approved by the Environmental Protection Agency (EPA), such a hurdle is not necessary with respect to biofuels used for non-motor vehicle purposes.

Federal law was signed at the end of December that created an expanded federal mandate for renewable fuels. Several advanced biofuel companies successfully educated federal legislators and the Administration about their technologies and the differences of their innovative fuels and technologies compared to the existing established biofuels such as ethanol and biodiesel. Please consider a technology neutral/resource neutral approach.

H2Diesel does not have comments on each of the six points outlined in the notice; therefore this testimony only addresses those points where the company has relevant input.

**(i) Promoting infrastructure for cellulosic feedstock delivery to processing plants and for the distribution of ethanol and other advanced biofuels to motor fuel distributors.**

While our expertise does not lie in the area of infrastructure, if there are incentives to promote infrastructure, they should not be for only cellulosic feedstock delivery. Technologies are being developed, or have been developed, such that ethanol may be produced from hemicelluloses, lignin, sugars and starches other than from corn starch. Some ethanols may be developed from waste materials, many of which fall in the category of cellulosic feedstock, but some of which do not. In short, the infrastructure promotion should be technology and resource neutral for all biofuels.

**(ii) Developing a regulatory and legislative framework to expedite siting and permitting of advanced biofuels manufacturing or distribution facilities within the Commonwealth:**

If the Commonwealth would like to encourage and expedite the development of advanced biofuels, then H2 Diesel suggests that it consider a more streamlined approach to permitting the necessary infrastructure for the facilities. For example, biofuels facilities require tanks for storage of the raw and processed materials. One streamlining procedure could be to permit the facilities to begin the process of preparing a site for the tanks once the application is submitted as opposed to waiting

until the permit is granted, especially if the raw materials consist of non-toxic substances such as animal fats or vegetable oils. Expediting permitting and siting of facilities could give the Commonwealth a competitive edge over other states. Alternatively, biomass production facilities will locate closer to the feedstock as opposed to the end user.

**(iii) Analyzing the energy and environmental lifecycle of advanced biofuels:**

Any lifecycle standard that is set should apply to all biofuels, both existing and future. Higher standards for future technologies may be discriminatory and unnecessarily hinder developing biofuel technologies.

The analysis of greenhouse gas emissions and lifecycle calculations is ever evolving. While there are some standard models, there are significant questions on some aspects of the analysis assumptions. Therefore, if there is a lifecycle greenhouse gas standard put in place, it should allow flexibility as to what the final greenhouse gas (GHG) emission reductions may be, whether it is twenty percent of a conventional fuel or more.

Given the evolution in the development of environmental lifecycle analyses, H2 Diesel suggests that the Commonwealth establish parameters for regulatory standards without adopting rigid, statutory standards that may, at some point in the future, be either too easy for fuels to achieve or nearly impossible. Also, the boundaries should be set in the analysis in a way that will demonstrate the GHG emission reductions. If the analysis is only at the motor level and not at a point of the raw fuels going into a process, the benefits may not be recognized by the analysis. For example, the analysis of biodiesel going into a motor vehicle engine, where the boundary of the analysis is the engine, versus the analysis of diesel fuel going into that same engine should ultimately be almost identical. However, if the boundary is at the point of the soybean plant and the extraction of the oil, the biodiesel would, or should, show greater GHG emission reductions.

**(iv) Fostering the development of a market for energy crops**

H2Diesel is very interested in the marketplace meeting the needs of supply; the company is not interested in becoming a raw material supplier. H2Diesel does not have the expertise to comment on how to develop the market for energy crops. H2Diesel will likely consider partnerships with energy crop suppliers in the future, but not at this stage of the company's development.

**(v) Tax incentives and research grants to identify and promote the development of domestic feedstocks and technologies necessary to manufacture advanced biofuels in the Commonwealth**

Any tax incentives or opportunities for research grants should have a technology and resource neutral approach. No one type of fuel or technology should be promoted versus another given that there are presently numerous approaches to renewable biofuel production. If anything, to the extent tax incentives or opportunities for research grants are mandated a significant percentage of these opportunities should specifically be set aside for non-traditional biofuels (i.e. not biodiesel or corn ethanol)]

**(vi)Regulatory and legislative actions intended to promote increased reliance on ethanol and other advanced biofuels as an ingredient for fuel in Massachusetts:**

The bulk of our comments pertain to the legislative and regulatory actions that have been proposed or are in effect today in the Commonwealth of Massachusetts.

Commonwealth of Massachusetts House Bill H4364

There are three key points regarding the proposed legislation that H2Diesel addressed in testimony to the Joint Committee Telecommunications, Utilities & Energy for House bill H4364 which we will share with the Massachusetts Advanced Biofuels Task Force. First, the proposed legislation significantly hinders the continued development and commercialization of innovative and advanced biofuel technologies, creating unnecessary roadblocks to participation in the MA biofuel market by focusing solely on biodiesel. Second, the proposal limits the flexibility of how biofuels could be used by requiring that biofuels be blended with conventional diesel fuel. Third, the proposed legislation does not address other, non-motor vehicle applications where biomass diesel substitutes could be used, namely space and process heating or electricity generation. These unnecessary exclusions do not serve the public interest.

*Proposed Legislation Excludes Innovative Technologies*

The proposed legislation includes only biodiesel or corn based ethanol in the mandates and tax credit. Given that H2Diesel's fuel would compete with biodiesel, our focus is on the biodiesel/diesel substitute section. Biodiesel has been marketed in various forms for almost twenty years. It is but one very specialized product among an array of renewable fuel products. Indeed, over the past five years, additional renewable replacements for conventional diesel fuel have been developed. These innovative biofuels, in many ways superior to biodiesel, are commonly referred to as second and third generation biofuels.

As the Act 'Furthering the Biofuels Clean Energy Sector' currently is drafted, H2Diesel's product, and other non-biodiesel biofuels, would not be included in the mandate. Section 3 of the bill refers only to biodiesel fuel very narrowly defined as a "mono alkyl ester combustible liquid fuel derived from agricultural plant oils or animal fats and meeting American Society for Testing and Materials (ASTM) specification D6751 (b100) blend stock for distillate fuels". Such a definition eliminates any other advanced biofuels which can be diesel substitutes for on-road and stationary applications. There are a number of new biofuel technologies available in the market today which will not count in this mandate, including the fuel produced by H2Diesel, because they are not mono alkyl esters and therefore do not meet ASTM D6751. By mandating the use of biodiesel the Commonwealth will ensure that no other innovative renewable fuel product will be available to its residents and businesses.

Some of these advanced biofuels have qualities that are superior to biodiesel, such as reduced NOx emissions, a lower temperature pour point or longer stability. If quality standards are the concern, there are other approaches that could be used at the regulatory level to allow second and third generation fuels to enter the marketplace. We urge the Commonwealth to avoid using a legislative solution to address a regulatory issue. In short, we ask that the committee provide flexibility.

The Commonwealth should not limit its choices, or consumers' choices, with respect to the biofuel technologies that can be used to meet the proposed mandate. Instead, it should welcome new technologies and encourage the development of a wide range of biofuels in order to meet its

goal of reducing dependence on fossil fuels. The bill as proposed will in effect prevent the development and ultimate use of second and third generation biomass-based diesel substitute fuels in Massachusetts.

From an economic and technology leadership perspective, such a measure will most likely have the effect of preventing the Commonwealth from being a leader in innovative biofuel technologies. If the proposed legislation is adopted as drafted, there will be no reason for H2Diesel or other innovative biofuel companies that do not produce a mono alkyl ester known as biodiesel to continue to try and develop our business in the Commonwealth of Massachusetts.

In December 2007, the President signed into law the Energy Independence and Security Act of 2007. This federal law includes a renewable fuel standard section that mandates applicable volumes be from biomass based fuels. All the fuels pertain to Section 211 of the Clean Air Act and therefore are targeted to motor vehicle applications. The categories of the mandates include renewable fuel, advanced biofuel, cellulosic biofuel and biomass-based diesel. Each of the categories is technology neutral. The law does not call for one particular biofuel to be used as a diesel substitute and another for gasoline. Attachment 1 includes a copy of Sections 201 and 202 pertaining to the federal Renewable Fuels Standard from the legislation which was signed into law in December 2007.

Many of the new advanced biofuel companies, like H2Diesel, were able to join together at the federal level and educate members of Congress and the Administration about our technologies and the slanted nature of existing statutes toward renewable fuels that were in existence when the former laws regarding biofuels were put into place. The numerous advanced biofuel companies and technologies do not have the resources to do the same level of educating in each of the 50 states as they were able to do in a consolidated effort at the federal level. H2Diesel is carrying this same message of technology and resource neutrality to the Commonwealth because of our efforts to establish a commercial facility in Massachusetts.

A suggested alternative definition could be:

“A diesel fuel substitute produced from nonpetroleum renewable resources. For diesel fuel substitutes used in the retail market of on-road vehicle fuels, the diesel fuel substitute shall meet the registration requirements for fuels and fuel additives established by the Environmental Protection Agency under section 211.”

Where the biomass portion of “renewable resources” would include but not be limited to wood; by-products or wastes from agricultural crops, animals, or food; energy crops; biogas; organic refuse-derived fuel; or algae.

#### *Flexibility in the Blended Fuel Requirement*

To the second point regarding the proposed Massachusetts House language-- the blended fuel requirement -- some advanced biofuels, such as H2Diesel's, are designed to be used as a neat fuel, in other words not as a blend but at a 100% concentration. Rather than requiring that all diesel fuel be blended only with biodiesel, another approach would be to call for the total biomass based diesel substitutes to equate to 2% of all diesel fuel sold by volume. This approach would allow the most economic solution to float to the surface. Given the statistical information available regarding how much diesel fuel is consumed in the state, if the Commonwealth were to require a mandated applicable volume, there would be more flexibility in how the fuel entered the market. In other words, the renewable fuel substitute for diesel, or any other petroleum

product, should allow for complete diesel substitution in some applications and not just a percentage blend.

*Expand Diesel Fuel Applications that Count*

There are more applications for diesel fuel than heating and motor vehicle use, such as in electricity generation, shipping, rail and jet fuel. We urge the Advanced Biofuels Task Force to expand the use of biofuels to all areas where petroleum based fuels could be reduced or replaced with a biofuel. However, the Task Force should not unnecessarily limit the amount of renewable biofuel consumed in the Commonwealth by requiring all the fuels to meet the same standards required for motor vehicle use. Such a burden would limit the amount of biofuel that could be used in the Commonwealth and would impose unnecessary standards. Therefore, we recommend that mandates have flexible regulatory requirements that recognize the great body of regulatory obligations already in place on an application by application basis.

Thank you for this opportunity to provide testimony on this critical biofuels effort.

Respectfully submitted,

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